PROCEEDINGS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY.

VOL. IV. APRIL, MAY & JUNE, 1847. No. 38.

Stated Meeting, April 2.

Present, eleven members.

Dr. PATTERSON, Vice-President, in the Chair.

A letter was received and read:—

From P. de Angelis, dated Buenos Ayres, 14th January, 1847, announcing the transmission of certain documents relative to events on the Rio de la Plata.

The following donations were announced:—

FOR THE LIBRARY.

Collections of the New Jersey Historical Society. Vol. II. New York, 1847. 8vo. This Volume contains the Life of William Alexander, Earl of Stirling, Major General of the Army of the United States during the Revolution. By William Alexander Duer, LL.D.—*From the New Jersey Historical Society.*

The Medical News and Library. Vol. V. April, 1847. No. 52. 8vo.—*From Messrs. Lea & Blanchard.*

The Constitution of the United States of America; the Proximate Causes of its Adoption and Ratification; the Declaration of Independence, &c. &c. Two Copies. Washington, 1846. 12mo. *From the Hon. George M. Dallas.*

Report of the Secretary of the Treasury, transmitting a Report from the Register of the Treasury, on Commerce and Navigation. Senate, 29th Congress, 2d Session, Document No. 7.—*From the same.*

Mr. Webster's Vindication of the Treaty of Washington, of 1842; in a Speech delivered in the Senate of the United States, on the 6th and 7th of April, 1846. A revised and corrected Copy.—*From Major James D. Graham.*

The Committee (Dr. Patterson, Professor Frazer, and Mr. Downes), to whom had been referred Mr. Sears C. Walker's paper on the planet Neptune, read 19th February, 1847, reported, recommending its publication in the Transactions of the Society, which was ordered accordingly.

Dr. Patterson read a letter from Mr. Walker, dated Washington, 31st March, 1847, containing some observations concerning the identity of the planet lately discovered, with that of Leverrier.

Dr. Ludlow, from the Committee appointed to consider the propriety of amending the laws regulating nominations for membership, made a report, which was laid on the table.

Mr. Ord presented a letter, directed to C. W. Bacon, Esq., from Alexander Ray, of Washington City, asking that an examination might be made of the papers of the late Chas. Pettit, now in the Library of the Society, in order to discover whether there are among them any documents illustrative of certain claims for revolutionary services.

Whereupon leave was granted to Mr. Bacon to examine the said papers, under the direction of the Librarian.

Stated Meeting, April 16.

Present, twenty-seven members.

Dr. CHAPMAN, President, in the Chair.

The following donations were announced:—

FOR THE LIBRARY.

Philosophical Transactions of the Royal Society of London, for the Year 1846. In Four Parts. 4to.—*From the Royal Society of London.*

List of the Royal Society, 30th November, 1846. 4to.—*From the same.*

Proceedings of the Royal Society of London. Nos. 62 to 66, inclusive. November 27th, 1845, to November 30th, 1846. 8vo. *From the same.*

Astronomical Observations made at the Royal Observatory, Greenwich, in the Year 1844, under the Direction of George Biddell Airy, Esq., M. A., Astronomer Royal. Published by order of the Board of Admiralty, in obedience to Her Majesty's Command. London, 1846. 4to.—*From the same.*

Transactions of the Royal Society of Edinburgh. Vol. XVII. Part II. Containing the Makerstoun Magnetical and Meteorological Observations for 1843. Edinburgh, 1847. 4to.—*From the Royal Society of Edinburgh.*

Astronomical Observations made at the Royal Observatory, Edinburgh. By the late Thomas Henderson, F.R.S. &c., Professor of Practical Astronomy in the University of Edinburgh, and Her Majesty's Astronomer for Scotland. Reduced and Edited by his Successor, Charles Piazzi Smyth. Vol. VI. For the Year 1840. Edinburgh, 1847. 4to.—*From the Royal Observatory, Edinburgh.*

Monthly Notices of the Royal Astronomical Society of London. Vol. VII. December 11, 1846. No. 10. January 8, 1847. No. 11. 8vo.—*From the Astronomical Society.*

The Quarterly Journal of the Geological Society. Edited by the Vice-Secretary of the Geological Society. No. 9. February 1, 1847. 8vo.—*From the Geological Society of London.*

Journal Asiatique, ou Recueil de Mémoires, d'Extraits et de Notices relatifs à l'Histoire, à la Philosophie, aux Langues, etc., des Peuples Orientaux. Quatrième Série. Tome VIII. No. 38. Octobre, 1846. 8vo.—*From the Asiatic Society of Paris.*

Annuaire Magnétique et Météorologique du Corps des Ingénieurs des Mines de Russie, ou Recueil d'Observations Magnétiques et Météorologiques faites dans l'Étendue de l'Empire de Russie, et publiées par ordre de S. M. l'Empéreur Nicolas I., sous les auspices de son Exc. M. de Wrontchenko, Ministre des Finances. Par A. T. Kupffer, Directeur des Observatoires Magnétiques des Mines de Russie. Année, 1843. Nos. 1 et 2. St. Pétersbourg, 1845. 4to.—*From the Director, M. Kupffer.*

Annals of the Lyceum of Natural History of New York. Vol. IV. April, 1847. Nos. 8 and 9. 8vo.—*From the Lyceum of Natural History.*

A Discourse delivered before the Rhode Island Historical Society, on the evening of January 13, 1847. By the Hon. Job Durfee. Providence, R. I. 1847. 8vo.—*From the Society.*

The Annals and Magazine of Natural History, including Zoology,

Botany, and Geology. Vol. XIX. Nos. 124, 125. February and March, 1847. 8vo.—*From Sir Wm. Jardine, Bart.*

The American Journal of the Medical Sciences. Edited by Isaac Hays, M.D. No. XXVI. New Series. April, 1847. 8vo.—*From the Editor.*

The African Repository and Colonial Journal. Vol. XXIII. April, 1847. No. 4. 8vo.—*From the American Colonization Society.*

ournal of the Franklin Institute of the State of Pennsylvania. Vol. XLIII. No. 256. Third Series. Vol. XIII. April, 1847. No. 4. 8vo.—*From Dr. Patterson.*

The Potatoe Plant, its Uses and Properties; together with the Cause of the present Malady, the Extension of that Disease to other Plants, the Question of Famine arising therefrom, and the best Means of averting that Calamity. By Alfred Smee, F.R.S. London, 1846. 8vo.—*From the Author.*

Échalas, paisseaux et lattes (Médoc), remplacés par des lignes de fil de fer, Mobiles, établies au Printemps et enlevées à l'Automne, à la Mécanique. Par André-Michaux. Paris, 1845. 8vo.—*From the Author.*

Report of the Exploring Expedition to the Rocky Mountains, in the Year 1842, and to Oregon and North California, in the Years 1843–1844. By Brevet Captain J. C. Frémont. Printed by order of the Senate of the United States. Washington, 1845. 8vo.—*From the Honourable Thomas H. Benton.*

Topographical Map of the Road from Missouri to Oregon, commencing at the mouth of the Kansas in the Missouri River, and ending at the mouth of the Wallah Wallah in the Columbia. In VII. Sections. From the Field Notes and Journal of Capt. J. C. Frémont, and from Sketches and Notes made on the ground by his Assistant, Charles Preuss. Compiled by C. Preuss, 1846, by order of the Senate of the United States.—*From the same.*

Charge to the Graduates of Jefferson Medical College of Philadelphia, delivered March 25, 1847, by Professor Dunglison. Published by the Graduating Class.—*From the Author.*

Directions in Regard to the Operations of the Coast Survey, for 1847–48. Approved by the Treasury Department, March, 1847. *From Prof. Bache.*

ADDITIONS TO THE LIBRARY BY PURCHASE.

Astronomische Nachrichten. Nos. 586 to 589, inclusive. Altona, January 9, to February 25, 1847. 4to.

The London, Edinburgh, and Dublin Philosophical Magazine, and Journal of Science. Third Series. Nos. 199, 200. February and March, 1847. 8vo.

Comptes Rendus Hebdomadaires des Séances de l'Academie des Sciences; par MM. les Secrétaires Perpétuels. Tome XXIII. Nos. 19 to 26, inclusive. November 9, to December 28, 1846. 4to.

The Committee (Drs. Hays, Bache and Condie), to whom had been referred the memoir of Dr. Charles D. Meigs, upon the reproduction of Didelphis Virginiana, read 19th March, 1847, reported, recommending its publication in the Transactions of the Society, which was ordered accordingly.

Professor Owen's paper on the reproduction of the kanguroo and the wombat, has left certain points still unsettled as to the reproduction of the marsupials; and MM. Milne Edwards and Pouchet, in their works, have left uncleared up several points, which it is the object of Dr. M.'s paper to explain.

The terms fœtus and embryo cannot properly be applied to the young of the didelphis while in the pouch; since, when first placed in the marsupium, the young opossum is endowed with all the attributes of a mammiferous quadruped in the full enjoyment of a real warm-blooded respiratory and digestive existence. None of the authors on this subject appear to have investigated the state of the early young; and the most vague and incorrect notions still prevail as to their condition.

On the 18th February, 1847, a light snow having fallen, the tracks of two opossums were followed on the 19th, over the snow, to the trunk of a hollow tree, wherein they had concealed themselves, and from which were taken a full grown male and female didelphis. It was supposed, from the appearance of the testes in the male, and the monotrem of the female, that the animals had retired for the rut, as they are rarely found in company at other seasons.

On the 27th February they were brought to me, and I carefully examined the marsupium, but could discover no trace of any mammary development of the base of the delicate nipples. February 28th, no change was discovered by inspection or careful palpation of the pouch. On Monday, March 1st, and on Tuesday, the 2d, there was not the least sign of change in the pouch. On Wednesday, the 3d, the mammary glands were visibly and palpably enlarged. On Thursday, 4th, still larger. On Friday, 5th, hard and

swollen. Saturday, 6th, passed without my inspection; but my servant examined the pouch, and discovered no young ones at the teats. At 3 P. M. on Sunday, 7th March, I opened the pouch, and discovered the young animals adhering to the nipples.

Here, then, was a manifest preparation for the reception of the marsupial young, began on Wednesday, the 3d March, and completed by Sunday, the 7th, which is four days. Hence it is clear that the notion heretofore entertained, that the embryo makes the teat wherever it happens to take hold, is unfounded, the preparation being as complete as in any other mammal.

The uterine gestation probably terminated on the night of Saturday, March the 6th, or the morning of Sunday, the 7th. The rut probably continued as late as the 18th or 19th February, which is 17 or 18 days; possibly the impregnations may have been a few days earlier than the said dates.

The observation settles, at least, the question as to one of the reproductive seasons, which in this case was February.

In Mr. Owen's observation on the kanguroo, the uterine gestation lasted thirty-nine days; but the kanguroo is a large animal in comparison; the opossum rarely being more than fifteen or sixteen pounds in weight.

Mr. Owen does not mention the preliminary condition of the mammary glands in the kanguroo.

Thirteen young opossums were attached to as many nipples, all strongly adhering, and busily employed in sucking the milk.

They moved the forearms, and paws, and heads, very freely; so that to open the sphincter marsupii was to disclose a very lively scene.

They were of a deep rose-tint, and without hair.

They were of equal size. I pulled one off from the nipple; and the attachment was so strong, that I expected to tear the body in two before I disengaged the mammilla from the stomal pore in which it was engaged. There was no bulb at the end of the nipple after the detachment of the young one.

No blood about the mouth or on the nipple followed the separation.

It was removed at 40 minutes past 7 P. M. It weighed exactly three grains and a half.

From the snout to the end of the tail it was eight-tenths of an inch long.

Laid in a watch glass, it moved freely round and round the glass, and turned over on one side and the other.

Examined by a lens, it respired by two nostrils and by the mouth. It died at ten minutes past nine o'clock, which was one hour and twenty-nine minutes after its separation, though exposed for some time to the cold air of the street.

The tongue was apparently equal to one-third the magnitude of the head—milk white, grooved so as to embrace half the cylindrical circumference of the teat, which was pressed, as to its other half, against the vault of the palate. The mouth was a pore, which I could not distinctly discern without a lens; the cavity of the mouth spacious. The diaphragm strong.

The heart, in its pericardium, large and powerful. The liver very large. The stomach filled with milk vesicles, examined in the microscope; the intestinal convolutions distended with milk and chyle, stained yellow with bile; the bladder of urine filled with fluid.

Two lungs, each consisting of minute transparent vesicles resembling small soap bubbles.

Such is the anatomy of the young opossum of three and a half grains, destined to attain a weight of fifteen or sixteen pounds.

While lying on the watch glass, I put the smooth point of a pencil to its stomal pore. The animal sucked at the pencil, and held on so firmly, that I could lift it partly off the glass by it.

Does this fact show that twenty-four hours earlier it could draw the delicate teat into the orifice?

The young, having the teat once in the mouth, cannot let it go; nor does it abandon it for many days. It adheres as the bitch adheres to the male organ of the dog.

I could discover no trace of an umbilicus. I sought for it with a good doublet. But it is not to be believed that a breathing, sanguiferous, digesting mammifer, can be developed independently of a placenta.

On Monday, March 12th, an animal being removed for dissection weighed twelve grains; it breathed thirty-two times per minute.

March 18th. A young one weighed eighteen grains. The tail very prehensile.

I immersed it in a cup of alcohol to kill it for dissection. It did not die in the fluid until it had been immersed in it for sixteen minutes.

The observations show the marsupial young to have a chylopoietic, warm-blooded, oxydating, innervating, and free-willing life, being as fully endowed with all the means of an independent existence, as the young of the elephant at the teat.

If this be so, all mystery as to the nature of the life of the marsupial young is at an end.

The Committee (Right Rev. Bishop Potter, Dr. Demmè, and Dr. Bethune), to whom had been referred Prof. Tucker's paper upon Cause and Effect, read 5th March, 1847, reported, recommending that the thanks of the Society be presented to Prof. Tucker for his paper, and that he be requested to prepare a copy, to be placed in the archives of the Society: which recommendation was adopted by the Society.

Mr. Ord announced the death of Mr. Charles A. Lesueur, of Havre, on the 12th December, 1846, in the 68th year of his age: whereupon Mr. Ord was requested to prepare an obituary notice of our late member, Mr. Lesueur.

The nominations for membership were then read and discussed, and the candidates balloted for.

On motion of Dr. Patterson, the project for the amendment of the By-laws, proposed by the Committee, was postponed until the next meeting.

The business of the meeting being finished, the ballot boxes were examined, and the following gentlemen declared to have been duly elected members of this Society:—

M. A. T. Kupffer, of St. Petersburg.
M. U. J. Leverrier, of Paris.
Mr. J. Y. Mason, of Virginia.
Mr. Richard A. Tilghman, of Philadelphia.
Prof. Wm. Procter, Jr., of Philadelphia.

Stated Meeting, May 7.

Present, twenty-two members.

Dr. Patterson, Vice-President, in the Chair.

Letters were announced and read:—

From l'Institut Royal des Sciences, Belles-Lettres et Arts des Pays-Bas, dated Amsterdam, 25th January, 1847, announcing

the transmission of the 3d Part of Vol. XII. of their new Memoirs:—

From the Corporation of the University in Cambridge, Mass., dated Cambridge, 1st December, 1846, acknowledging the receipt of No. 35, Vol. IV. of the Proceedings of this Society: and,—

From Wm. Procter, Jr. acknowledging the receipt of notice of his election to membership in the Society.

The following donations were announced:—

FOR THE LIBRARY.

Flora Batava, ou Figures et Descriptions de Plantes Belgiques. Par Jan Kops, et J. E. Van der Trappen. Nos. 142 to 146, inclusive. Title and Index to Vol IX. 4to.—*From H. M. the King of the Netherlands.*

Nieuwe Verhandelingen der Eerste Klasse van het Koninklijk-Nederlandsche Instituut van Wetenschappen, Letterkunde en Schoone Kunsten te Amsterdam. The 3d Part, and the completion of the XIIth Vol. 4to.—*From the Royal Institute of the Netherlands.*

Bulletin de la Société de Géographie. Troisième Série. Tome VI. Paris, 1846. 8vo.—*From the Geographical Society of Paris.*

Journal Asiatique, ou Recueil de Mémoires, d'Extraits et de Notices relatifs à l'Histoire, à la Philosophie, aux Langues et à la Littérature des Peuples Orientaux; et publié par la Société Asiatique. Quatrième Série. Tome VIII. No. 39. Novembre, Décembre, 1846. 8vo.—*From the Asiatic Society of Paris.*

Boletin de la Sociedad Economica de Amigos del Pais de Valencia. Año 7°. Tomo 4o. Noviembre, 1846. 8vo.—*From the Society.*

Boston Journal of Natural History, containing Papers and Communications read before the Boston Society of Natural History, and published by their direction. Vol. V. No. 3. Boston, 1847. 8vo.—*From the Society.*

Proceedings of the Academy of Natural Sciences of Philadelphia. Vol. III. Jan. and Feb. 1847. No. 7. 8vo.—*From the Academy.*

Proceedings of the Providence Franklin Society. Vol. I. April, 1847. No. 2. 8vo.—*From the Society.*

The African Repository and Colonial Journal. Vol. XXIII. May, 1847. No. 5. 8vo.—*From the American Colonization Society.*

The American Journal of Science and Arts. Conducted by Prof. B.

Silliman, B. Silliman, Jr., and James D. Dana. Second Series. No. 9. May, 1847. 8vo.—*From the Editors.*

The Medical News and Library. Vol. V. May, 1847. No. 53.—8vo.—*From Messrs. Lea & Blanchard.*

Journal of the Franklin Institute of the State of Pennsylvania. Vol. XLIII. No. 257. Third Series. Vol XIII. May, 1847. No. 5. 8vo.—*From Dr. Patterson.*

Critical and Miscellaneous Essays. By Alexander H. Everett. Second Series. Boston, 1846. 12mo.—*From the Author.*

Catalogue de la Bibliothèque de M. Libri. Belles-Lettres. 1re Partie. Paris, 1847. 8vo.—*From M. Hector Bossange.*

ADDITION TO THE LIBRARY BY PURCHASE.

Annales de Chimie et de Physique. Troisième Série. Tome XVIII. Décembre, 1846. 8vo.

Mr. Ord made a donation for the Cabinet of a Model of a Temporary Rudder, invented by Captain Edward Pakenham, and for which the Society instituted at London for the Encouragement of Arts, Manufactures and Commerce, presented their Gold Medal. An account of this invention appears in the Transactions of the said Society, Vol. VII., 1789.

The Committee (Prof. Henry, Dr. Patterson, Mr. M'Culloh,) to whom had been referred the paper of Prof. Norton upon the Imponderable Agents of Nature, reported the following resolution, which was adopted:

Resolved, That it is inexpedient, at this time, to take action upon the Memoir of Prof. Norton, read to the Society on the 4th of December last, and that the same remain in charge of the Committee, awaiting the further communications of the author upon the same subject; subject always, however, to the author's control.

Prof. Tucker made an explanation upon the subject of the paper recently presented by him to the Society.

Prof. M'Culloh read to the Society, the following letter from Mr. Sears C. Walker:—

Washington, D. C. May 3d, 1847.

Dear Sir,—I have just completed Elements V. of the planet Neptune, as follows:—

Perihelion point,	π =	1°	45′	32″.90	m. eq. Jan. 1, '47.
Node,	Ω =	129	51	13 .53	„
Inclination,	i =	1	45	38 .10	

Eccentricity, $e = 0.005052917$
Mean distance, $a = 30.145119$
Epact Jan. 1, 1847, $M = 326° 2' 1''.34$ m. noon Greenwich
M. daily siderial motion, $\mu = 21.437,843$
Period in Trop. years, $T = 165^{y}.51330$

I do not hesitate to pronounce them the most probable elements of the present disturbed orbit of Neptune, that can be deduced from a discussion of all the observations of Neptune extant to this date. These have already accumulated to 479: viz. 113 American and 366 European. All have been compared with an ephemeris which I computed from my IV. Elements of Neptune. Thirteen normal places have been thus obtained, and the corrections of Elements IV. computed from these normal places by the method of least squares. In forming the equations of condition, I carried into effect the plan sketched out in my former letter. The variations of the radius vector were made a function of the ascending powers of the intervals from a date assumed for the origin of time.

The variations of the true anomaly were derived from those of the radius vector, by means of Laplace's formulæ for mechanical quadrations, on the condition that equal areas should be described in equal times. This mode of forming the equations of condition, for the purpose of deducing an orbit from direct observation, is new, as far as I am informed. I send you the comparison of the Ephemeris from Elements V. with the thirteen normal places in geocentric longitude and latitude:

DATE.	Observation less theory.	
	$\Delta\alpha$	$\Delta\delta$
1846, Aug. 9,	— 0″.22	— 0″.72
Sept. 28,	+ 0 .08	+ 0 .37
Oct. 8,	+ 0 .17	+ 0 .28
18,	— 0 .06	+ 0 .09
28,	— 0 .20	— 0 .71
Nov. 7,	— 0 .13	— 0 .42
17,	+ 0 .25	— 0 .27
27,	— 0 .25	— 0 .05
Dec. 7,	— 0 .49	— 0 .08
17,	+ 0 .29	+ 0 .25
27,	+ 0 .14	+ 0 .33
1847, Jan. 16,	+ 0 .35	— 0 .93
April 6,	— 0 .10	+ 0 .65

You will notice that the two elements left indeterminate in my former direct solution II. are now completed. They confirm my former conclusions respecting the smallness of the eccentricity.

They exhibit, moreover, an unexpected coincidence between the perihelion points of Elements III. and V.—thus:

Elements III. $\pi = 0^{\circ}\ 12'\ 25''.51$ hypothesis of identity with Lalande star.
„ V. $\pi = 1\ 45\ 32\ .90$ deduced from direct observation.

When we consider the difficulty of deducing the perihelion point of an orbit so nearly circular, from an apparent arc of less than two degrees, it must be admitted that the close agreement is *accidental.* Yet we cannot with propriety refuse it some weight in favour of the affirmative of the hypothesis.

You will, doubtless, wish to know what modification the present disturbed elements V. require in order to represent the present path of the planet, and locate it, May 10th, 1795, where the Lalande star (now missing) was observed. I would answer that the node should be increased about 927″, and the inclination one tenth of that amount (92.7″), and the planet should be supposed to have had its average daily orbital motion increased, by the perturbations of the other planets, 0″.02061, during the last fifty-two years. In other words, the actual period must have been oscillating from a value, 165.668, nearer the double of that of Uranus, towards one more remote, viz: 165.513.

Such is the residual quantity to be explained, before pronouncing conclusively on the question of identity. It is probable that it might be reduced in amount, by using intermediate values of the elements modified so as to represent the planet's recent path: but in my examination of the question, I was disposed to borrow nothing from the hypothesis itself towards its confirmation.

The members of the American Philosophical Society must be gratified to learn that one of their number, Prof. Peirce, has, so far as we are informed, anticipated the Europeans in applying Laplace's analysis to the remarkable inequality of $(2\ \mu' - \mu)$ between the motions of Uranus and Neptune. Prof. Peirce has shown under what conditions we must have 0 for the permanent value of $(2\ \mu' - \mu)$, by the same course of reasoning as that by which Laplace demonstrated that we must have the same value for the expression $(2\ \mu - 3\ \mu' + 2\ \mu)$ for the three innermost satellites of Uranus.

The researches of Prof. Peirce generally, on the problem of finding the mathematical planet or planets, that satisfy the residual perturba-

tions of Uranus, will be looked for with much interest. This field of research, though entered with such splendid genius by Leverrier and Adams, it would seem is by no means exhausted.

Yours, truly,
SEARS C. WALKER.

To Robert M. Patterson, M.D.
Vice-President American Philosophical Society.

Dr. Boyè reported verbally, in behalf of himself and Mr. Eckfeldt, to whom had been referred the "*Fixed Mercury*," forwarded by Mr. Sartori, of Leghorn, that upon examination the first specimen proved to be an amalgam of tin and mercury; the second, pure tin; and the third an arseniuret of copper: neither of the latter contained mercury.

The project for the amendment of the Laws, postponed at the last meeting, was called up, and the amendment, as proposed by the Committee, adopted, as follows:—

Chap. I. Sect. 2, shall be amended to read as follows:—

"It shall be the duty of the Officers and Council to nominate to the Society, from time to time, such persons as they shall judge worthy of becoming members therein: and any member of the Society may at any meeting nominate, in writing, a candidate for membership; and the nomination so made may, in like manner, be seconded by another member."

Dr. Elwyn presented Vol. IV. No. 36, of the Proceedings of the Society.

Stated Meeting, May 21.

Present, nineteen members.

Dr. Chapman, President, in the Chair.

Letters were received and read:—

From the Literary and Philosophical Society of Manchester, dated Manchester, 9th February, 1847, announcing a donation to the Library of this Society: and,—

From the Proprietors of the Bowditch Library, dated Boston, 1st May, 1847, acknowledging the receipt of Vol. IX. Part 3, of the Transactions of this Society.

The following donations were announced:—

FOR THE LIBRARY.

Monthly Notices of the Royal Astronomical Society of London. Vol. VII. February 12, 1847. No. 12. 8vo.—*From the Society.*

Memoirs of the Literary and Philosophical Society of Manchester. Second Series. Vol. VII. Part II. London, 1846. 8vo.—*From the Society.*

The Annals and Magazine of Natural History, including Zoology, Botany, and Geology. Vol. XIX. No. 126. April, 1847. 8vo. *From Sir Wm. Jardine, Bart.*

Topographische Sehets van een gedeelte van Sumatra, door Dr. P. W. Korthals, ridder van de Orde van den Nederl. Leeuw, gewezen Lid der Nat. Commissie in Nederlandsch Oost-Indie, &c. Leyden, 1847. 8vo.—*From the Author.*

Catalogue de Livres Français, Grecs, Latins, Anglais, Espagnols, Orientaux, etc. etc. Premier Supplément. Paris, 1847. 8vo. *From Hector Bossange.*

Reports of the Pennsylvania Hospital for the Insane. By Thomas S. Kirkbride, M.D., Physician to the Institution. Philadelphia, 1846. 8vo.—*From the Author.*

Hybridity in Animals and Plants, considered in reference to the Question of the Unity of the Human Species. By Samuel George Morton, M.D. New Haven, 1847. 8vo.—*From the Author.*

ADDITIONS TO THE LIBRARY BY PURCHASE.

The Edinburgh New Philosophical Journal. Conducted by Professor Jameson. January to April, 1847. No. 84. 8vo.

The London, Edinburgh, and Dublin Philosophical Magazine, and Journal of Science. Third Series. Vol. XXX. No. 201. April, 1847. 8vo.

Astronomische Nachrichten. Nos. 590, 591, 592. Altona, March 4th to the 20th. 4to.

Prof. Frazer presented Vol. IV. No. 37, of the Proceedings of the Society.

Stated Meeting, June 18.

Present, fourteen members.

Dr. CHAPMAN, President, in the Chair.

A letter was received and read:—

From the Proprietors of the Bowditch Library, dated Boston, 4th June, 1847, acknowledging the receipt of Vol. IV. Nos. 36 and 37, of the Proceedings of the American Philosophical Society.

The following donations were announced:—

FOR THE LIBRARY.

Journal of the Senate of the United States of America, being the Second Session of the Twenty-eighth Congress, begun and held at the City of Washington, December 2, 1844. Washington, 1844. 8vo.

Journal of the House of Representatives of the United States, being the Second Session of the Twenty-eighth Congress. Washington, 1844–45. 8vo.

Public Documents, printed by order of the Senate of the United States, First Session of the Twenty-eighth Congress. Vol. VII. Washington, 1844. 8vo.

Public Documents, printed by order of the Senate of the United States, Second Session of the Twenty-eighth Congress. Embraced in Eleven Volumes. Vols. I. II. III. VII. VIII. IX. X. in two parts, and XI. Washington, 1845. 8vo.

Executive Documents, Second Session, Twenty-eighth Congress. Vols. I. II. III. IV. in two parts. Washington, 1844–45. 8vo.

Reports of Committees, Second Session, Twenty-eighth Congress. Washington, 1844–45. 8vo. Eighteen Volumes in all.—*From the Department of State.*

The Fourteenth Annual Report of the Royal Cornwall Polytechnic Society. Falmouth, 1846. 8vo.—*From the Society.*

O Auxiliador da Industria Nacional. Periodico da Sociedade Auxiliadora da Industria Nacional, estabelecida no Rio de Janeiro. Vol. I. Nova Serie. Nos. 5, 8, 9, 10. 8vo.—*From the Society.*

Proceedings of the Academy of Natural Sciences of Philadelphia.

Vol. III. March and April, 1847. No. 8. 8vo.—*From the Academy.*

Summary of the Transactions of the College of Physicians of Philadelphia. From December, 1846, to April, 1847, inclusive. 8vo. *From the College.*

The African Repository and Colonial Journal. Vol. XXIII. June, 1847. No. 6. 8vo.—*From the American Colonization Society.*

Journal of the Franklin Institute of the State of Pennsylvania. Third Series. Vol. XIII. June, 1847. No. 6. Whole No. 258. Vol. XLIII. 8vo.—*From Dr. R. M. Patterson.*

The Medical News and Library. Vol. V. June, 1847. No. 54. 8vo.—*From Messrs Lea & Blanchard.*

New Plan of a Perpetual Civil Calendar, Julian and Gregorian, showing by Inspection the correspondence between Monthly dates and the Day of the Week, in any Year before or after the Christian Era. By William M'Ilvaine. Burlington, N. J. 1846. Three Copies.—*From the Author.*

ADDITIONS TO THE LIBRARY BY PURCHASE.

Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences. Tome XXIV. Nos. 1 to 12. 4 Janvier au 22 Mars, 1847. 4to.

Annales de Chimie et de Physique. Troisième Série. Tomes XIV. et XV., 1845. Tome XIX., Janvier, Février, Mars, 1847. 8vo.

Histoire Naturelle des Poissons; par M. le Baron Cuvier, et par M. A. Valenciennes. Tomes Dix-huitième et Dix-neuvième. Paris, 1846. 4to. Planches Nos. 487—553, inclusivement.

DONATION TO THE CABINET.

Two Ancient Vases from South America; one from the Island of Puira, and the other from the Island of Payta.—*From the Family of the late J. Milnor Williams, through Mr. Joseph Saxton.*

Dr. Dunglison referred to a letter received by him from Prof. Müller, of Berlin, dated Berlin, 20th April, 1847, in which Prof. Müller stated that he had been much occupied with the bones of the Basilosaurus or Zeuglodon, collected by Mr. Koch in Alabama, on which he designed to publish an extensive treatise. There can be no doubt, he says, that it was a mammiferous animal. Remains of the animal have been

found in the lower tertiary formation of Europe, namely, in the Island of Malta, in Southern France, and in Germany on the Danube. In Malta, the teeth only were found, as long ago as 1670. In Southern France, and Austria on the Danube, parts of the skull were discovered.

Dr. Patterson announced to the Society the confirmation, by the late arrivals from Europe, of Mr. Walker's discovery of the identity of the Lalande star and Neptune, and read to the Society the following letter on this subject from Mr. Walker.

Washington, D. C., June 1st, 1847.

My dear Sir,—I send you my Elements VII. of Neptune, derived from Elements V., by clearing them of the effect of the present disturbing action of the three great planets (that of the others is almost insensible).

The pure elliptic formula—

$$(1.) \quad \ldots \quad \frac{1}{a} = \frac{2}{r} - \frac{r\,r\,n\,n}{k\,k}$$

becomes, in the disturbed orbit,

$$(2.) \quad \ldots \quad \frac{1}{a'} = \frac{2}{r'} - \frac{r'\,r'\,n'\,n'}{k'\,k'}$$

In which the accented quantities are the disturbed values of the elliptic quantities above: k is the Gaussian constant, and k' is a similar quantity for the actual position of all the masses of the system, December 7th, 1847. No. (2) gives, from the values furnished by least squares,—

$$k' = 3545.489 \quad , \quad k = 3548''.188$$
$$a' = 30.17775$$
$$\mu' = k'\,a'^{-\frac{3}{2}} = 21''.41144$$
$$T' = 165^{y}.7175$$

These values of a', μ', and T', substituted for a, μ, and T, in Elements V., give Elements VII., which are a first approximation towards the pure elliptic elements of Neptune. The following comparison of Lalande's observations, as reduced by Mauvais, *Comptes Rendus*, 1847, *No.* 16, will serve as a test of the ephemeris from these Elements. The places are referred to the mean equinox of Jan. 1st, 1847, corrected for parallax, but not for aberration.

Comparison of Lalande's Observations with Ephemeris VII.

Date, 1795. Mean Time, Paris.	Lalande's Two Observations.		Correction of Ephemeris VII.	
	R. A.	Dec.	R. A.	Dec.
h. m. s.				
May 8th, 11 10 57	213° 41′ 3″.89	−11° 35′ 4″.96	+141″.1	+39″.5
May 10th, 11 2 55	213 38 5.16	−11 34 5.64	+147.8	+36.4
Observed two days' motion	− 178″.73	+ 59.″32		
Computed do. Elem'ts VII.	− 185″.42	+ 62.″38		
Discrepancy	6.″69	3.″06		

The small residual discrepancy of 3′ is to be ascribed to the neglect of the perturbations for the interval of 52 years, and to the small errors of Elements VII.

Yours truly and respectfully,

SEARS C. WALKER.

To Dr. R. M. PATTERSON,
Vice President Am. Phil. Soc.